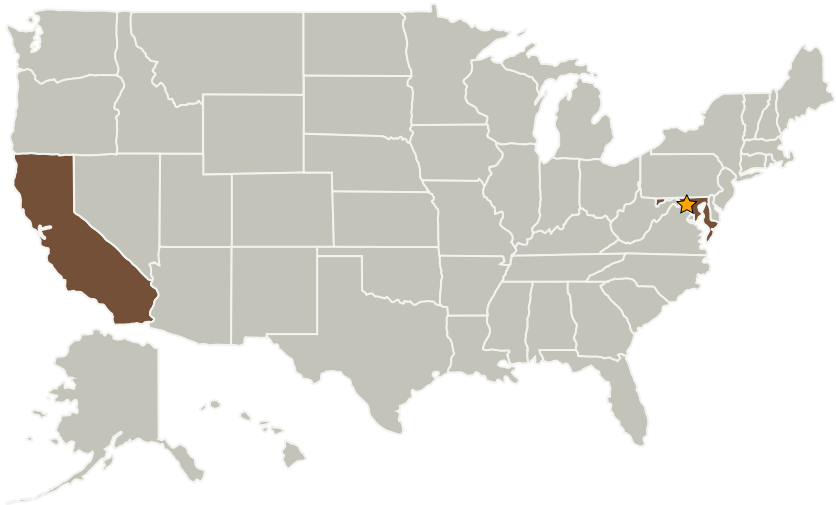
# Universal Space IP Transparent Proxy, Phase II

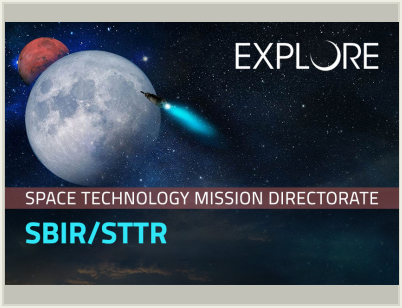
Completed Technology Project (2005 - 2007)

## Project Introduction

Communications applications are strategically moving toward Internet Protocol-based architectures and technologies. Despite IP's huge potential, (e.g. cost effectiveness, reduced development and installation times), it has not proved to be appropriate for space communication applications. IP-based space networking links exhibit poor performance induced by narrow bandwidth, long propagation loops, large transmission errors, and/or intermittent connectivity. In Phase I, Broadata Communications, Inc. (BCI) successfully designed a preliminary network protocol technology to overcome these problems. BCI's innovative Universal Space IP Transparent Proxy (USIT) achieves accurate network measurements and reconfigurations, providing a 10 times, on average, improvement in network throughput, as compared to existing state-of-the-art IP solutions. In addition, the USIT solution is transparent (thus independent of any network functions such as compression) and is seamless (i.e., works with non-USIT network hosts/nodes). Its simplicity will enable it to be placed in a variety of Earth network nodes, ensuring its compatibility with, and ability to improve, network performance in space. In Phase II, BCI will optimize the system's design to develop a full-scale highly optimized system, including two tangible prototypes: a portable space-qualified USIT software package, compatible with existing NASA space network nodes, and, a rack-mountable stand-alone GSSL embedded system, with both hardware and software.

## Primary U.S. Work Locations and Key Partners



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## Table of Contents



## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Goddard Space Flight Center (GSFC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Goddard Space Flight Center(GSFC) | Lead Organization | NASA Center | Greenbelt, Maryland |
| Broadata Communications, Inc. | Supporting Organization | Industry | Torrance, California |

| Primary U.S. Work Locations | |
|---|---|
| California | Maryland |

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.3 Internetworking
    - TX05.3.3 Information Assurance